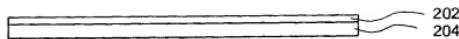


**FIG. 1**

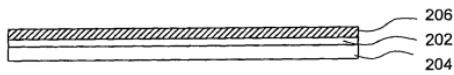
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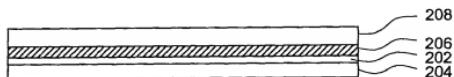
**FIG. 2A**



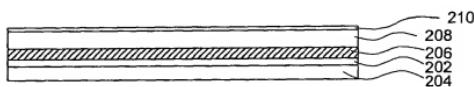
**FIG. 2B**



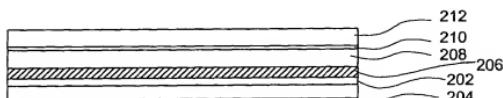
**FIG. 2C**



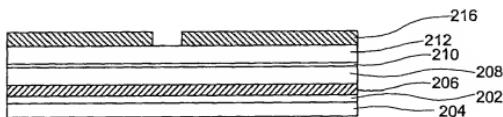
**FIG. 2D**



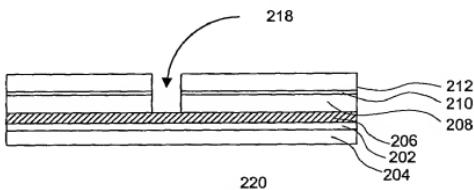
**FIG. 2E**



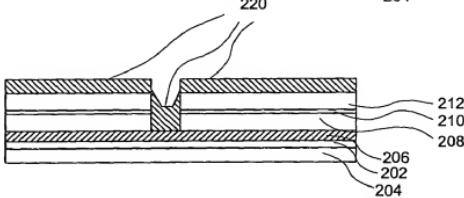
**FIG. 2F**



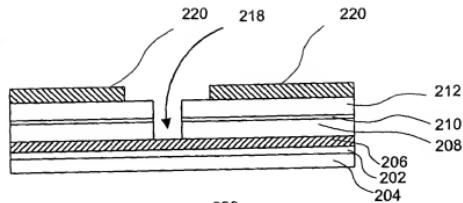
**FIG. 2G**



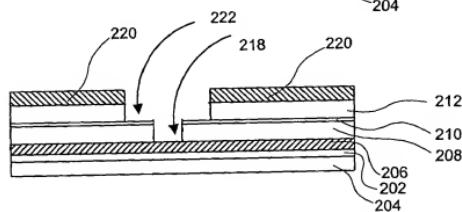
**FIG. 2H**



**FIG. 2I**

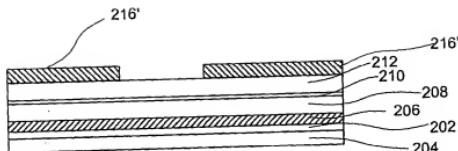


**FIG. 2J**

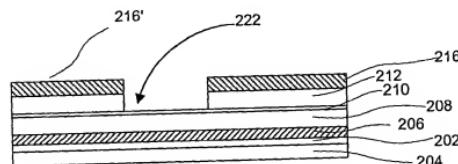


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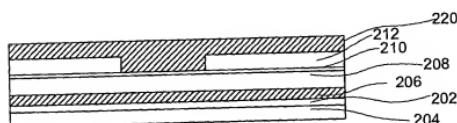
**FIG. 2F'**



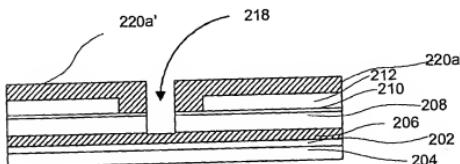
**FIG. 2G'**



**FIG. 2H'**

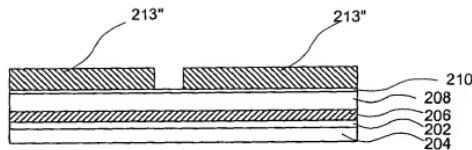


**FIG. 2I'**

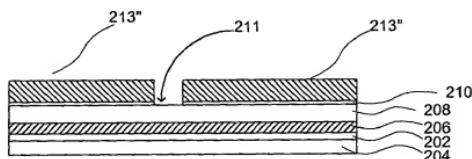


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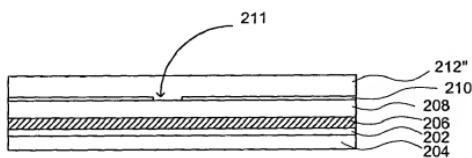
**FIG. 2E"**



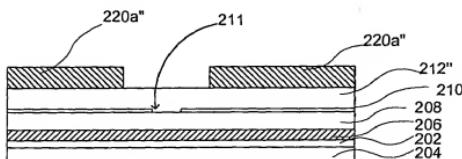
**FIG. 2F"**



**FIG. 2G"**



**FIG. 2H"**



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Resist patterning using Si<sub>3</sub>N<sub>4</sub> incorporated SiC barrier film

### After trench patterning

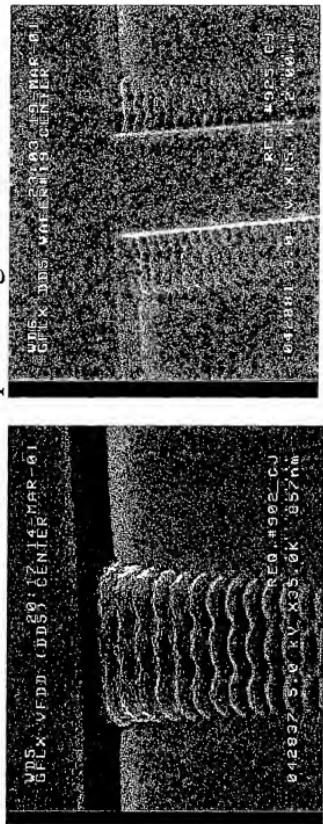


FIG. 3A

FIG. 3B

### After trench etch

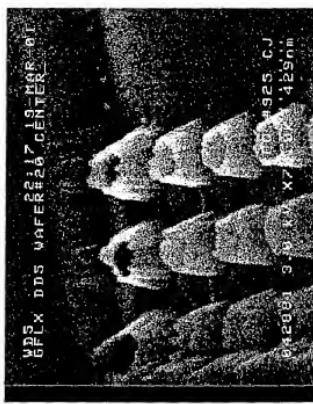


FIG. 3C

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Resist poison was solved by using 2-layer barrier stack in which top layer is Ti free.

After trench patterning

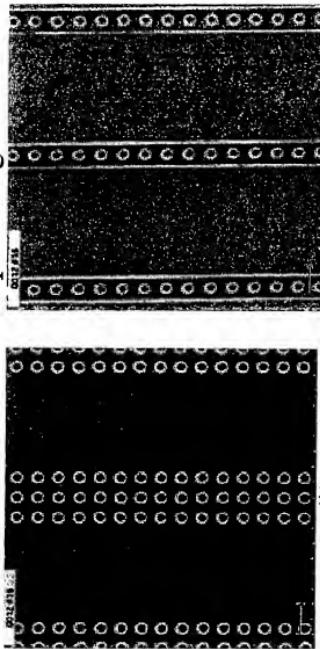


FIG 4A

After trench etch

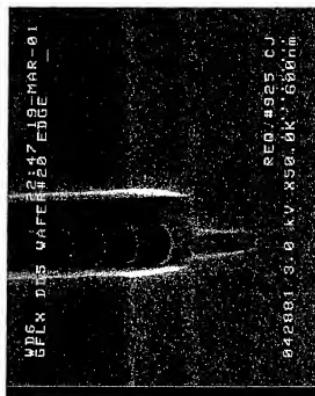


FIG 4C